**Climate Change Research Project – Rising Sea Levels and Erosion**

* Student study sheet DONE
* Slo-mation video DONE
* Poster 🡪 Make and print out info to put on, explaining A B C
* Slide show 🡪 Narrated by scripted explanations of;   
  -Understating of the phenomenon  
  -Causes and effects  
  -Conclusions related too

Student Study Notes – Rising Sea Levels and Erosion

* A warming climate causes seawater to expand and ice over land to melt, both of which result in a rise in sea level.
* Scientists have determined that global sea level has been steadily rising since 1900 at a rate of at least 0.04 to 0.1 inches per year
* Sea level is rising because of two main causes in connection with climate change. First, as the oceans heat up due to increase in global temperature, the seawater physically expands, thus taking up more space in the ocean basin and causing a rise in water levels. The second cause is from the shrinking of land ice, such as when mountain glaciers and ice sheets melt, the liquid is released into the planets water systems
* As seawater reaches farther inland, it can result in destructive erosion, flooding of wetlands, contamination of agricultural soil, and lost habitat for fish, birds, and plants
* Higher sea levels means large storms like hurricanes occur, there will be more water brought onto land causing even more damage.
* The first impact rising sea levels will have on people is to the people whom live on the coastlines across the globe. Erosion will make beach-line housing dangerous, unpredictable and in some cases inhabitable
* From the data of information recorded over the past century of sea-rise, most predictions say that the rising will only accelerate.
* Saltwater intrusion; Sea level rise can mean that saltwater intrudes into groundwater. This endangers drinking supplies, agricultural soil, freshwater supplies, and some plant life
* Global average sea level has increased 8 inches since 1880.
* Rates of local sea rise can be affected by global, regional, local, and landscaping factors
* Rise in sea levels causes land subsiding, which then further allows water to come more inland. This makes sea level rise and erosion a very dangerous looping occurrence
* The long term conditions connected with sea levels rising largely relies on the future release of heat trapping gases (green house gases)
* Even if global warming emissions were to drop to zero by 2016, sea levels will continue to rise for decades while the ocean and land ice adjusts to the changes we have already made to the atmosphere

Slide Show Narrative Script

-Understating of the phenomenon  
-Causes and effects  
-Conclusions related too

*Basic intro*

Rising sea levels and erosion is a phenomenon that is occurring as we know it. These occurrences are abnormal, dangerous and threatening to life on earth. So, what is sea level rise and erosion? The two major causes of global scale sea-level rise is thermal expansion, and the loss of land based ice. These contributors are caused by the increase of global temperature, which ultimately results in the melting of ice throughout the world. All the new excess water that gets added to the plant by melting now has nowhere to go but up. This is the physical act of the sea levels rising. This then triggers numerous outcomes, including erosion. Erosion is defined as the gradual destruction or diminution of something. In this case, it is the diminishing of coastline shore. Going forward into the coming century, erosion is one of the top threats facing coast-line inhibitors, which, as of 1998, happens to be over half the population of the planet — about 3.2 billion people — live and or works on a coastal strip of the planet.

*Going into detail; two main causes*

So, the two main causes of rising sea levels are thermal expansion, and the addition of excess liquid into the earth’s water systems.

Thermal expansion, thermal expansion is the tendency of matter to change in volume as a response to a change in temperature, specifically through heat transfer. This means that as the atmosphere is getting warmer, it is simultaneously heating up the water on the planet as well. As the water will get warmer, it will physically expand and actually take up more room. This is a huge factor is the rise of sea levels. Now combine that information and expand it to the rate of which the ice caps are melting, adding even more water into the system. This makes it easy to imagine how quickly the water is rising and how it has no reason to stop any time soon.

The second cause of rising sea levels is the continuing addition of water into the biosphere. As the global temperature rises, the icecaps melt and the now ‘new’ water spreads out throughout the planets water surface. This contributor is linked back to the raise in global temperature, which being cause by the release of heat trapping gases. The more toxins we put into the air, the hotter the atmosphere gets, and the more ice melts,.. This all results in higher amounts of fluid that then has to find its place on our planet. The problem is that there geographically enough space for the water to fit, so the only place it has to go is up. This is then the cause of erosions, which will become more and more frequent over the future years.

*Risks of results of*

Some risks of sea levels rising:

-Costal shoreline erosion and degradation. Higher sea levels will allow waves to come further inland, wearing down soil and land and creating more potential for erosion.   
-A rise in storm surges. A storm surge is an abnormal rise of water that is generated as aftermath of a storm. A storm surge rises the water level in that area over and above what it was prior to the storm. Higher sea levels means the elevated water levels will be able to reach even further inland and cause threatening damage to people, infrastructures and communities.

-Permanent flooding to certain regions. It is predicated that many low-lying costal land areas are expected to become gradually submerged by the rapidly rising sea levels.

-Saltwater intrusion. As water levels will creep more and more inland, this brings the risk of saltwater intrusion. Salt water will seep into the ground and effect freshwater supplies, agricultural soils and many plants and animal species.

*Conclusion*

Global sea level rise accelerated in response to the warming of the atmosphere and the ocean, and melting of the cryosphere (cyrosphere is the places on earth where water is in solid form, as ice or snow). From the rates we have already accelerated global warming, even if our carbon footprint were to drop to zero immediately, the damage has already been done. Rising sea levels cannot be stopped over the next several hundred years due to our actions from the pas century. Our actions from the past have and are currently creating the consequences for our planet in the future.